

**Alaska Energy Authority & Denali Commission
Emerging Energy Technology Fund Progress Report**

Grant Number: 74310049

Project Title: Small Community Self Regulating Grid – Tuntutuliak

Grantee: Intelligent Energy Systems

Reporting Period: April 1, 2013 to June 30, 2013

Deliverables Submitted: Milestone 1 has been completed and invoiced. Milestones 2 and 3 are still in progress. No deliverables within milestones.

Budget: Previous invoicing submitted for ETS unit hardware and software. Reflected in financial progress report. Total expenditures reported to date are \$155,783.17. Project is currently on budget.

Schedule Status: Project is slightly delayed (based on timeline in grant agreement), partially due to overall delays in agreement execution and secondary contract negotiations with ISER and INE, but will not have a significant impact on completion of project or overall project timeline. Current projections will push final project report milestone back to September 2014.

Percent Complete: 15% project completion overall.

Miles tone	Task		Deliverables	Progress Status
	1	Purchase components for controller upgrades and software license		100% Complete
	2	Complete controller programming for prototype		25% Complete
	3	Test single ETS unit controller for frequency response at ACEP test facility	ACEP test results	
	4	Develop system instrumentation plan	Instrumentation plan	50% complete
	5	Baseline data collection and system modeling	System one line, estimated installation costs	25% complete
	6	Economic analysis on stove consumption	Economic analysis	
	7	Purchase 3-phase load balancing unit (boiler)		
	8	Purchase remaining advanced controller components and instrumentation		
	9	Install instrumentation, ETS controller upgrades, and phase-balancing boiler.	Commissioning report installations	
	10	Monitor system in centralized and distributed frequency controls modes and optimize system efficiency		
	11	Data evaluation and draft	Draft project report	

		project report		
	12	Final project report	Final report	

Work Progress: A test and reporting plan was developed with ACEP and AEA. Contracts established between UAA/ISER and UAF INE for unit frequency response. Software and hardware for residential electric thermal unit control was determined, purchased and delivered. Work is in progress on self regulating control programming and testing. Phase balancing unit controller in design.

System instrumentation plan has been developed and funds are being requested to complete the installation. Data collection plan includes three primary elements: baseline energy usage and cost surveys at recipient home, baseline power quality and frequency regulation studies and ongoing performance monitoring. The instrumentation and data collection plan has been completed. Installation of data collection, monitoring equipment and reporting software is in progress. Contract in place for economic evaluation, and draft survey documents have been completed.

Future Work: Test unit to be delivered to UAF INE for frequency response evaluation. In light of project partners (ACEP and IES) determining that the testing of the ETS unit isn't sizable or lengthy enough to warrant use of the ACEP test bed, the unit will be tested at UAF's Institute of Northern Engineering. Potential grant amendment necessary to outline change of location for ETS unit testing.

Site visits for baseline economic analysis are planned for late summer to coincide with the start of the school year. Installation of monitoring equipment, baseline power quality studies and implementation of data collection and reporting system is proposed for completion within the next 90 days.

Within next reporting period, milestones 2, 3, and 4 will be complete. Milestones 5, 6, 7, and 8 will see progress towards completion pending timing of various contractor availability.

Project remains on budget with no significant problems foreseen. Slight delay of milestones dependent on contractor availability. No freight delivery issues due to barge and transportation schedules.